

Claims

1. A hydraulically actuated quick coupling device, comprising:

5           an attachment frame including a centerline;  
          a latch member operatively associated with the attachment frame and movable between a disengaged position and an engaged position;

          a link having first and second end portions,  
10       the first end portion of the link being connected to the latch member;

          a pivot member having first and second end portions and a central portion, the first end portion pivotally connected on the attachment frame and the  
15       second end portion pivotally connected on the second end portion of the link; and

          a cylinder having head and rod end portions, the head end portion being connected to the attachment frame and the rod end portion being connected to the  
20       central portion of the pivot member, the cylinder being operable for moving the latch member between the disengaged and engaged positions.

2. The hydraulically actuated quick  
25       coupling device of claim 1, wherein when the latch member is in the engaged position the connection between the pivot member and the attachment frame defines a first position and the connection between the pivot member and the cylinder defines a second  
30       position and the connection between the cylinder and

the attachment frame defines a third position, the first and second position define a first line therethrough and the second and third position define a second line therethrough with the second line being  
5 positioned substantially at a ninety degree angle from the first line.

3. The hydraulically actuated quick coupling device of claim 1, including a supply of  
10 hydraulic fluid and a circuit for pressurizing the hydraulic fluid wherein the cylinder is connected with the supply of hydraulic fluid so that upon pressurization thereof the cylinder is actuated for moving the latch member.

15 4. The hydraulically actuated quick coupling device of claim 1, wherein each of the cylinder and link are angularly positioned in relation to the centerline of the attachment frame.

20 5. The hydraulically actuated quick coupling device of claim 4, wherein the angular position of the cylinder and link are each less than ninety degrees when the latch member is in the  
25 disengaged position.

6. The hydraulically actuated quick coupling device of claim 4, wherein the angular position of the cylinder is less than ninety degrees  
30 and the link is approximately ninety degrees when the

latch member is in the engaged position.

7. The hydraulically actuated quick coupling device of claim 1, wherein the latch member  
5 is slidably disposed within the attachment frame and is angularly positioned approximately ninety degrees from the centerline of the attachment frame.

8. The hydraulically actuated quick  
10 coupling device of claim 1, wherein the second end portion of the link defines a slot therethrough in which the second end portion of the pivot member is connected to allow for transitional movement therein.

9. The hydraulically actuated quick  
15 coupling device of claim 3, wherein the circuit includes a means for diverting the supply of hydraulic fluid from a portion of the circuit to the cylinder.

20 10. The hydraulically actuated quick coupling device of claim 9, wherein the portion of the circuit from which the supply of hydraulic fluid is diverted controls a function other than the actuation of the cylinder.

25 11. The hydraulically actuated quick coupling device of claim 3, including:  
a second latch member operatively associated with the attachment frame and spaced from the first  
30 latch member, the second latch member being movable

between a disengaged position and an engaged position;

a second link having first and second end portions and being spaced from the first link, the first end portion of the second link being connected  
5 to the second latch member;

a second pivot member spaced from the first pivot member and having first and second end portions and a central portion, the first end portion of the second pivot member pivotally connected on the  
10 attachment frame and the second end portion of the second pivot member pivotally connected on the second end portion of the second link; and

a second cylinder having head and rod end portions, the head end portion of the second cylinder being connected to the attachment frame and the rod  
15 end portion of the second cylinder being connected to the central portion of the second pivot member, the second cylinder being connected with the supply of hydraulic fluid so that upon pressurization thereof  
20 the second cylinder is actuated for moving the second latch member between the disengaged and engaged positions.

12. The hydraulically actuated quick  
25 coupling device of claim 11, wherein the actuation of the first and second cylinders is contemporaneous.

13. The hydraulically actuated quick  
coupling device of claim 12, wherein each of the  
30 second cylinder and link are angularly positioned in

relation to the centerline of the attachment frame.

14. The hydraulically actuated quick coupling device of claim 13, wherein the angular  
5 position of the second cylinder and link are each less than ninety degrees.

15. The hydraulically actuated quick coupling device of claim 13, wherein the angular  
10 position of the second cylinder is less than ninety degrees and the second link is approximately ninety degrees when the latch member is in the engaged position.

16. The hydraulically actuated quick coupling device of claim 11, wherein the circuit  
15 includes a means for diverting the supply of hydraulic fluid from a portion of the circuit to the first and second cylinders.

17. The hydraulically actuated quick coupling device of claim 16, wherein the portion of  
20 the circuit from which the supply of hydraulic fluid is diverted controls a function other than the actuation of the cylinder.

18. The hydraulically actuated quick coupling device of claim 11, wherein the first and  
30 second latch members are slidingly disposed within the attachment frame and each are angular positioned

substantially ninety degrees from the centerline of the attachment frame.

19. A work machine having a frame, a loader  
5 arm connected to the frame and extending forwardly therefrom, and an implement, the work machine comprising:

an attachment frame having a centerline and being connectable to the loader arm;

10 a latch member operatively associated with the attachment frame and movable between a disengaged position and an engaged position;

a link having first and second end portions, the first end portion of the link being connected to  
15 the latch member;

a pivot member having first and second end portions and a central portion, the first end portion pivotally connected on the attachment frame and the second end portion pivotally connected on the second  
20 end portion of the link;

a supply of hydraulic fluid;

a circuit for pressurizing the hydraulic fluid; and

a cylinder having head and rod end portions,  
25 the head end portion being connected to the attachment frame and the rod end portion being connected to the central portion of the pivot member, the cylinder being connected with the supply of hydraulic fluid so that upon pressurization thereof the cylinder is  
30 actuated for moving the latch member between the

disengaged and engaged positions to respectively  
detach and attach the implement to the work machine.

20. The work machine of claim 19,
- 5 including:
- a second latch member operatively associated  
with the attachment frame and spaced from the first  
latch member, the second latch member being movable  
between a disengaged position and an engaged position;
  - 10 a second link having first and second end  
portions spaced from the first link, the first end  
portion of the second link being connected to the  
second latch member;
  - a second pivot member spaced from the first  
15 pivot member and having first and second end portions  
and a central portion, the first end portion of the  
second pivot member pivotally connected on the  
attachment frame and the second end portion of the  
second pivot member pivotally connected on the second  
20 end portion of the second link; and
  - a second cylinder having head and rod end  
portions, the head end portion of the second cylinder  
being connected to the attachment frame and the rod  
end portion of the second cylinder being connected to  
25 the central portion of the second pivot member, the  
second cylinder being connected with the supply of  
hydraulic fluid so that upon pressurization thereof  
the second cylinder is actuated for moving the second  
latch member between the disengaged and engaged  
30 positions.

21. The work machine claim 20, wherein the actuation of the first and second cylinders is contemporaneous.

5

22. The work machine of claim 21, wherein each of the first and second cylinder and link are angularly positioned in relation to the centerline of the attachment frame.

10

23. The work machine of claim 22, wherein the angular position of the first and second cylinder and link are each less than ninety degrees when the latch member is in the disengaged position.

15

24. The work machine of claim 22, wherein the angular position of the first and second cylinder is less than ninety degrees and the first and second link is approximately ninety degrees when the latch member is in the engaged position.

20

25. The work machine of claim 19, wherein the circuit includes a means for diverting the supply of hydraulic fluid from a portion of the circuit to the first and second cylinders.

25

26. The work machine of claim 25, wherein the portion of the circuit from which the supply of hydraulic fluid is diverted controls a function other than the actuation of the cylinder.

30



27. The work machine of claim 19, wherein  
the first and second latch members are slidingly  
disposed within the attachment frame and each are  
5 angular positioned substantially ninety degrees from  
the centerline of the attachment frame.